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10/568,788	10/03/2006	Roy Derrick Achilles	930092-2028	6410

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EXAMINER
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FULLER, ROBERT EDWARD

ART UNIT	PAPER NUMBER
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3676

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,788	<b>Applicant(s)</b> ACHILLES, ROY DERRICK	
	<b>Examiner</b> ROBERT E. FULLER	<b>Art Unit</b> 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Exhibit A</u> .                        |

### **DETAILED ACTION**

1. Applicant's submission, filed August 19, 2008, has been carefully considered. Examiner maintains the rejections based on the Matthias reference, with slight modifications. Claims 3, 13, and 20, which were previously rejected under 35 U.S.C. 103, are now rejected under 35 U.S.C. 102. Also, examiner has modified the 103 rejection based on Matthias. Examiner has also discovered new prior art with which to reject the claims. Examiner has added a claim objection, a rejection under 35 U.S.C. 112, and a rejection under 35 U.S.C. 102(f). This Office Action has not been made final.

#### ***Claim Objections***

2. Claims 2-10 are objected to because of the following informalities: The first word of these claims should be changed from "A" to --The--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The specification provides no indication as to what a "high grade" diamond is. Therefore, examiner cannot ascertain the scope of the claim.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(f) he did not himself invent the subject matter sought to be patented.

5. Claims 1-26 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. The subject matter claimed in the instant application is substantially the same as that disclosed and claimed in an application by Griffin et al., serial number 11/163,323, published as US 2006/0086540.

6. Claims 1-3, 5-13, 15-20, and 22-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Matthias et al (US 6,601,662).

Matthias et al discloses a polycrystalline diamond cutter having abrasive elements shown in Figs 1A, 1B which comprises a layer of polycrystalline diamond 30 bounded to a substrate 34 along an interface the layer having a working surface 70 opposite to the interface and any outer peripheral surface extending between the working surface and the interface (see Figs 19B, 20B for example). The annular region adjacent the peripheral surface is anticipated by region 30 or 70, which is extended away from the working surface which is lean or free of catalyzing material.

- The region rich in catalyzing material is anticipated by region near reference numeral 30 shown in fig. 20B.
- The sintering agent is anticipated by the powdery carbonate of Mg, Ca, Sr sintering agents of '622 reference.

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- The region rich in catalyzing material comprises more than one region shown in figs. 20A-22A, where more than one rich areas are shown.
- The substrate is cemented tungsten carbide in '622 reference.
- Matthias discloses a thickness of the catalyst-lean region being 100 micrometers, which falls within the range of 30-500 micrometers.

7. Claims 1, 2, 5-12, 15-19, and 22-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Oles (US 6,344,149).

With regard to claims 1 and 11, Oles discloses a polycrystalline diamond abrasive element, comprising a layer of polycrystalline diamond (64) bonded to a substrate (62) along an interface, the polycrystalline diamond layer having a working surface opposite the interface and an outer peripheral surface (66) extending between the working surface and the interface, the polycrystalline diamond abrasive element having an annular region adjacent the peripheral surface extending away from the working surface, the annular region or a portion thereof being lean in catalyzing material (see column 7, lines 26-39).

With regard to claims 2, 12, and 19, the polycrystalline diamond layer also has a region adjacent the working surface which is lean in catalyzing material.

With regard to claim 5, the polycrystalline diamond layer also has a region rich in catalyzing material (68).

With regard to claim 6, the catalyzing material is present as a sintering agent in the manufacture of the polycrystalline diamond layer (see column 4, lines 47-52).

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With regard to claims 7, 15, 22, and 23, since the particle size within the catalyst-rich region is variable, the catalyst-rich region inherently has many regions which differ in average particle size (see column 1, lines 32-38).

With regard to claims 8, 16, and 24, the element is a cutter.

With regard to claim 9, the diamond is of a high grade, as best understood by the examiner.

With regard to claims 10, 18, and 26, Oles discloses a cemented carbide substrate (see column 5, lines 8 and 9).

With regard to claims 17 and 25, the cutting element is secured to a bit (see column 4, lines 26-30).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 14, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matthias et al (US 6,601,662).

Matthias discloses that the thickness of the catalyst-rich region should be at least 150 micrometers (see column 14, lines 43-48).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided at least 500 micrometers of catalyst-rich material, since Matthias teaches a thickness of *at least* 150 micrometers, therefore one

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skilled in the art would provide a thickness greater than this, presumably as thick as 500 micrometers depending on the abrasiveness of the formation being drilled, as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claims 3, 4, 13, 14, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oles in view of Matthias et al.

Oles discloses a region lean in catalyzing material that extends to at least half way through the diamond layer, but fails to disclose the precise depth of the layer.

Matthias discloses a layer (80) in a PCD cutter element that is lean in catalyzing material. Matthias states that this layer should be about 100 micrometers (see column 13, lines 18-22). Matthias also states that at least 150 micrometers of the layer rich in catalyzing material should be left (see column 14, lines 43-48). However, Matthias does not state that at least 500 micrometers of catalyst-rich material should be left.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have made the thickness of the lean region of Oles to be between 30 and 500 micrometers, since Matthias teaches that a thickness value (100 micrometers) which falls within that range is the optimal value (see Matthias, column 13, lines 18-22). Also, it would have been obvious to have provided at least 500 micrometers of catalyst-rich material, since Matthias teaches a thickness of *at least* 150 micrometers, therefore one skilled in the art would provide a thickness greater than this, presumably as thick as 500 micrometers, depending on the abrasiveness of the formation being drilled, as it has been held that discovering an optimum value of a result

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effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

### ***Response to Arguments***

11. Applicant's arguments filed August 19, 2008 have been fully considered but they are not persuasive.

Applicant has argued that Matthias does not disclose “an annular (ring-shaped) region adjacent a peripheral surface of a polycrystalline diamond layer that is lean in catalyzing material.” Examiner respectfully traverses this argument. The claims merely recite that the *polycrystalline diamond abrasive element* has an annular region adjacent its periphery. The claims do not require the *region lean in catalyzing material* to be annular. The diamond element of Matthias (i.e. everything above substrate 32 in Figures 19 and 20) clearly has an annular region (see Exhibit A, attached to this Office Action). As seen in both Figures 19 and 20, at least a portion of this annular region is lean in catalyzing material.

Applicant has also argued that the thickness of both the catalyst-lean region and the catalyst region is not an obvious design choice. With respect to the thickness of the catalyst-lean region, examiner respectfully points out that Matthias actually discloses a thickness within the claimed range. With respect to the thickness of the catalyst-rich region being at least 500 micrometers, as Matthias states that the thickness should be at least 150 micrometers, examiner can only conclude that one of ordinary skill in the art would make the thickness of the catalyst-rich region to be greater than 150



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micrometers, perhaps as thick as 500 micrometers, and this value would simply be arrived at through routine experimentation within the level of ordinary skill in the art.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-0419. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/  
Primary Examiner, Art Unit 3676

10/30/2008  
REF